



TREATING BREWERY WASTEWATER

CLIENT:	The Coastal Brewing Company
LOCATION:	Australia
TREATMENT TYPE:	Brewery wastewater
CAPACITY:	1000 gallons per day
SYSTEM SIZE:	2 x BioGill Towers

SITUATION

Making beer is a water intensive process that generates wastewater high in solids and dissolved organic material, measured as total suspended solids (TSS) and biochemical oxygen demand (BOD). Given the nature of this high strength wastewater, many breweries face discharge fees, with some even trucking wastewater offsite.

The Coastal Brewing Company, a brewery based in Forster, Australia, had to reduce BOD in its wastewater to below 600mg/L, in order to meet regulations from the local authority. Co-founder and head brewer, David Black, wanted a wastewater treatment solution that was effective, affordable and simple to operate.

Another key factor was that as beer production volumes frequently change, the solution had to cope with fluctuating wastewater loads.



The Coastal Brewing Company had to reduce BOD in its wastewater to meet local regulations.

SOLUTION

In 2017, the brewery installed a treatment system using two BioGill Towers to treat wastewater in excess of 4,000mg/L BOD₅ to below 600mg/L BOD₅.

The BioGill Towers use patented nano ceramic media, known as gills. These gills provide the ideal habitat for microorganisms to consume nutrients from the brewery wastewater. Microorganisms grow through the gills, feeding on the nutrients in the wastewater on one side and drawing oxygen from the opposite side, growing into a healthy treating biomass. This biomass can cope with flow fluctuations and absorb shock loads.

As the technology is modular and scalable, further BioGill Towers can be added as beer production increases. The current system was designed for brewery production of 1900, beer barrels per year (bbl/year) and to treat 870 gallons of wastewater per day (gal/day). As production increases, two more BioGill Towers can be added alongside the existing Towers (Figure 1), to handle a doubled production capacity of up to 3,800 bbl/year and 1,740 gal/day of wastewater.



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DESIGN

The wastewater first passes through initial settling and a screening process to remove particles larger than 1mm, such as grain and fiber from the hops. The wastewater then moves into an equalization tank where pH is adjusted. From there wastewater is pumped to the top of the first BioGill Tower where it is dispersed over the gills. The water flows by gravity down through the bioreactor, where microbes consume the dissolved organic matter. Partially treated wastewater flows from the first Tower to a second Tower where the process is repeated, further cleaning the water. The fully treated water then moves to a discharge tank, and held until nighttime hours when the brewery is permitted to discharge the water to the local sewer system.



Figure 1. BioGill wastewater treatment plant.

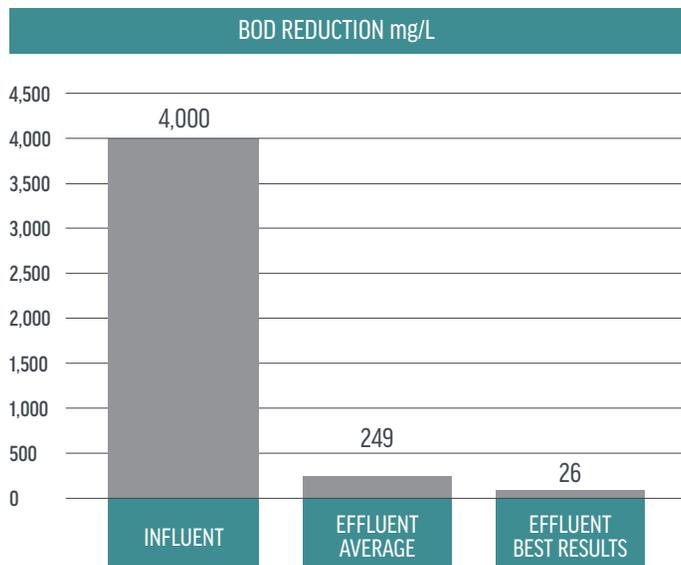


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our interview with David Black, Co-founder, The Coastal Brewing Company



RESULTS

The BioGill system was designed for influent BOD of >4000mg/L. The brewery's compliance requirement for sewer discharge was <600mg/L BOD. Operating since May 2017, the BioGill system has achieved 100% compliance. Sampling results demonstrated an effluent average of 249mg/L BOD, with the best recorded result of 26mg/L.



Two BioGill Towers were installed as part of the wastewater treatment system.

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